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HOMEBREW COMPUTER CLUB NEWSLETTER

Robert Reiling, editor ◻ Post Office Box 626 ◻ Mountain View, CA 94042

Volume Number 2, Issue 3 March 31, 1976

THIS MONTH - Robert Reiling

HOMEBREW COMPUTER CLUB ONE YEAR OLD - The first club meeting was held March 5, 1975. Gordon French and Fred Moore put it together and are due credit for starting the first amateur computer club in the Bay Area. Thirty-two people attended that meeting and now attendance exceeds 250 people. The Newsletter is currently distributed to approximately 600 people each month, mostly in the Bay Area but many are sent throughout the United States and some are sent to Canada and Overseas.

This growth can be attributed to an unusual interest by people in hobby computing, availability of hardware that is affordable, and the need to exchange ideas and information about hardware and the ever necessary software. Currently, no single source really covers the information needed by the computer hobbyist. The HOMEBREW COMPUTER CLUB is a meeting place where every two weeks, if one desires, he can meet and talk with someone with a common interest. New things may be learned and problems can be solved.

The Club's meeting format is unique in that every meeting is conducted in a forum fashion. Lee Felsenstein moderates and conducts the "mapping period" so that during the following "random access period" one can quickly contact someone with compatible interests.

No meeting to date has been dull and no doubt this can be attributed to our unique approach. Let's keep it that way with an opportunity for everyone to be involved.

FLEA MARKET - Mark this on your schedule. Randy Wigginton has again arranged for flea market space at Bellarmine College Preparatory in San Jose. The date is April 21, 1976 and the time 7:00 P.M. This is the place to buy and sell computer goodies. Contact Randy after seven if you need directions, telephone 732-1656 in Sunnyvale.

MOS TECHNOLOGY - Peter Schnal telephoned following the last meeting to explain that MOS Technology is only dropping the MCS6501 which was pin-compatible with Motorola's MC6800. MOS Technology will continue to produce and market five microprocessors in its 6500 family, which are not pin-compatible with Motorola's MC6800. The companies have agreed to a cross license relating to patents in the microprocessor field.

SUPER SIMPLE FLOPPY DISK INTERFACE - The Computer Hobbyist has developed a simple, inexpensive controller for floppy disk drives. Issue number nine has part 1 of a two part article. It is excellent and if you are interested in a floppy disk system you should read it. The Computer Hobbyist is available by subscription at $6.00 per year. Write TCH, Box 295, Cary, NC 27511

Sasolburg
South Africa

HOMEBREW COMPUTER CLUB

As normal it is again the Americans that take the lead in computer hobbyist clubs.

After a troublesome search I have found that no such club in any form exists in South Africa.

In my area there are quite a few people interested in forming a club. Unfortunately it is quite discouraging that no circuits are available on 8008 or 8080 microprocessors.

At a beginning stage our finances are limited so we decided to try and find means of building the system ourselves. In this circumstance we decided to contact your club to try and acquire the following:

1. Circuit for complete 8008 or 8080 system (For us P.C. board layout diagrams are almost a must.)

2. Circuit for T.V. input/output system.

We would gladly pay an amount for your service. As we are eager to start, we would appreciate an answer soon.

Correspondence with your club members would mean a lot to us.

I hope we are not asking to much.

Yours faithfully,
F. J. Pretorius

F. J. Pretorius
19 Adumstr
Sasolburg
South Africa

Biccari
Italy

Dear Sir,

At the end of the article COMPUTER BITS by Jerry Ogdin in the January issue of Popular Electronics there was a list of hobbyist clubs. I chose your club, so if you will accept me I would like to join your HOMEBREW COMPUTER CLUB. You could ask why I want to join and it would be a little difficult to explain it for me in English. I may try it; I am a 30 year old man, always been a DO IT YOURSELF hobbyist from mechanics to chemistry to boating to painting to sculpture and so on, I have always liked to do things with my hands, but lately I fell in love with electronics and particularly with minicomputers, but I am not ready yet to go into constructing one from kits. I know my present limits, even if I did a COBOL programming course and so I know something about the computer.

Before I start to construct something I want to know everything possible about the matter, and since in Italy there are no magazines, no books, no data where I could get the information and the knowhow I need, that is the main reason for joining your club. I want to exchange or better learn your experiences, to know your advices, to have your help, to know where to get some books, data sheets, electronic components, and the like.

Hoping you would accept me as a member in your club and eagerly expecting your reply, I am yours.

Salvatore DI FRANCO
VIA ANNUNZIATA No. 6
71032 BICCARI (FOGGIA)
ITALY

HOMEBREW COMPUTER CLUB members if you can assist in any way take the time to write these people. Better yet send them some technical material. You can be sure it will be appreciated.

Dear Mr. Gates,

I was gratified to see your letter published in the HOMEBREW COMPUTER CLUB NEWSLETTER. I am one of the 10% minority who paid for Altair 8K BASIC. One of the reasons I invested a substantial amount of money in an Altair with 8K of dynamic RAM memory and I/O board, was so I could get 8K BASIC, which I plan to use for accounting and other applications.

As a professional programmer/analyst with almost 10 year's background in accounting, manufacturing and research applications using COBOL, PL/1 and assembler language, I deplore the flagrant abuse of copyrighted software apparently practiced by many hobbyists, and some professionals too. What is the difference between stealing software and someone's stereo outfit? In either case the guilty party is a common thief.

There appears to be a doubt in some people's minds that charges for infringement of software copyrights would stand up in court. Unfortunately, computer programs are very easy to copy and steal. I'm not a lawyer, but I read in Computerworld and other industry publications about cases which have stood up.

I have no objection to legitimately paying $75 for 8K BASIC, or to being required to purchase suitable hardware in order to qualify for that price. However, I resent the fact that people are getting free bootlegged copies.

I would like to develop some good software for business and accounting applications using microprocessors. If I were to spend hundreds of hours of my time - not to mention some money too - on a general ledger package, why should I give it away for someone else to sell services on? We programmers have to eat, too! So why should BASIC or APL be given away?

Charles L. Pack

INTERMETRICS PL/M6800 COMPILER - Walton Ferris, Jr.

The principle developer of this compiler is Glen Bingham. The name of the compiler is PL/M6800. It compiles for the 6800 microprocessor, in a Motorola Loader format, and is as compatible with PL/M (for the 8080) as possible. The I/O has to be different. It was developed by Intermetrics, 701 Concord Ave., Cambridge, Mass. 02138, (617) 661-1840, and is available now through GE timesharing or may be purchased ($1000). It is about 200K bytes long and runs on 360 or 370 under OS. The object code is put onto disc and one may print only the error list file, or the source with error list, or the assembly code, etc. A 160 page Specification Manual is available from Intermetrics for $10 which is sufficient for those that know how to use a procedure oriented language like PL/1 or ALG01. At the Palo Alto GE timesharing office, 969-3772, the person to talk to is Bob Goldstein, who also knows about the programs for Intel, Motorola, TI, NEC, etc. I wonder if someone local could arrange for this little 200K program to be put on some company's 360 for our use, or if some company who buys it for their own use could allow us off-shift access to it? Alternatively the 6800 users could perhaps make arrangements with GE to share one account; Bob is willing to set up an ID check system but there are also some economic hurdles.

OCTAL LOADER PROGRAM - Charles L. Pack

Are you tired of loading your Altair or Imsai through the switch panel? You say it took you 2½ hours to enter 698 bytes and then ths power failed? Well, hsre is an octal loader program which allows you to type in your program, three digits per binary byte, on just about any keyboard. The octal loadsr itself occupies only 86 bytes; after it has been entered for the first tims you can punch it out on paper tape.

This loader also checks your data for errors. Each program byte consists of a three-digit octal number whose value is between 000 and 377, inclusive. Only the digits 0 through 7 are allowed, and the first octal digit within each byte must not be greater than 3. Incorrect digits, alphabetic characters and spscial charactsrs are ignored. Valid digits are "echoed" to your output device (normally a Teletype printer or a video display).

In addition, you may format your printout by using the carriage return and line feed keys and the space bar. This is desirable because a Telstype machins does not automatically start over at the beginning of a new line when the carriags reaches the end of the current line. So, instead of your output looking like 161061124000333000346201 it can look like this: 161 061 124 000 333 000 346 201 . Furthermore, you can segregate parts of your program on different lines, to faoilitate proof reading. The carriage return, line feed and spacs characters are not stored in the computer; all program bytes are stored consecutively.

Ths hardware requirements for this program ars an 8080-based microprocessor with at least 256 bytes of memory; a suitabls I/O interface, an ASCII-encoded keyboard and some type of display. The latter two items can be a Teletype machine or a "TV Typewriter". I have implemented the octal loader on an Altair 8800 squipped with 4K bytes of memory, a Processor Technology 3P+S I/O board and an ASR-33 Teletype machine.

In the listing, all numbers are in octal except STMT which is the statement number in decimal. PG is the memory page and ADDR is the memory address within the page. The octal loader begins at location zero and occupies 86 bytes. The second and third bytes of the loadsr (in stmt. no. 1) are the memory address and page number, respectively, where it will start loading your binary data. You can use any address you wish here, as long as it is above the loader.

The address jumpers on your I/O interface board must be set for 000 and 001. 000 is for ths status byte and 001 is for ths data byte. The contents of the bytes at locations 000,015 and 000,017 (in statements numbered 6 and 7) will depend on the type of I/O interface you are using; more specifically, whioh status bits you are using for "receiver data ready" and "transmit buffer empty". On my 3P+S I/O board I used the rightmost bit (bit 0) for "data rsady" and the leftmost bit (bit 7) for "transmit buffer empty". I intended this to be compatibls with the Altair 88-SIO board revision 1, or revision 0 with the status bit

modification. If you havs an SIO board revision 0, you will nsed to change the contents of bytss 000,015 and 000,017 to octal 240 instead of octal 201. If you have a 3P+S I/O board, you can use any status bit configuration you want, by changing the jumpers in area "G". On the Altair SIO board, the choics of status bit is fixed by the hardwars; there is no jumper.

```
STMT  PG ADDR   OBJECT CODE    S O U R C E   S T A T E M E N T
   1  000 000   041 000 001          LXI  H  ;Load memory address
   2  000 003   001 000 002  NXBYTE: LXI  B   ;B is byte counter; C is
                                              ;temporary work rsgistsr.
   3  000 006   161                  MOV  M,C ;Zero out the memory byte.
   4  000 007   061 124 000  NXDIGT: LXI  SP,STKADD ;Load stack pointer
   5  000 012   333 000              IN   0   ;input status channel
   6  000 014   346 201              ANI  201 ;zero out unwanted bits
   7  000 016   376 201              CPI  201 ;is data available?
   8  000 020   300                  RNZ      ;  back to NXDIGT if not
   9  000 021   333 001              IN   1   ;input data channel
  10  000 023   346 177              ANI  177 ;zero out parity bit
  11  000 025   376 060              CPI  060 ;is character less than 0?
  12  000 027   332 051 000          JC   TESTCR ;jump if true
  13  000 032   376 070              CPI  070 ;is character > 7?
  14  000 034   320                  RNC      ;  back to NXDIGT if true,
                                              ;  character is invalid.
  15  000 035   110                  MOV  C,B ;
  16  000 036   015                  DCR  C
  17  000 037   015                  DCR  C   ;is this the first digit?
  18  000 040   302 066 000          JNZ  ECHO  ;jump if not
  19  000 043   376 064              CPI  064 ;is character > 3?
  20  000 045   320                  RNC        ;back to NXDIGT if trus,
                                               ;character is invalid because
                                               ;first octal digit must bs <= 3.
  21  000 046   303 066 000          JMP  ECHO ;we have a valid character.
  22  000 051   376 015      TESTCR: CPI  015 ;carriage return?
  23  000 053   312 066 000          JZ   ECHO  ;jump if true
  24  000 056   376 012              CPI  012 ;lins feed?
  25  000 060   312 066 000          JZ   ECHO  ;jump if trus
  26  000 063   376 040              CPI  040 ;space?
  27  000 065   300                  RNZ        ;back to NXDIGT if not,
                                               ;character is invalid.
  28  000 066   323 001      ECHO:   OUT  1   ;output data channel to
                                              ;"echo" a valid character.
  29  000 070   376 060              CPI  060 ;is character a digit?
  30  000 072   330                  RC       ;  back to NXDIGT if true.
  31  000 073   346 007              ANI  007 ;zero out all but the thrse
                                              ;rightmost bits.
  32  000 075   110                  MOV  C,B
  33  000 076   015                  DCR  C   ;is this the third digit?
  34  000 077   372 114 000          JM   ORMEM ;jump if true
  35  000 102   015                  DCR  C   ;is this the second digit?
  36  000 103   372 111 000          JM   SECND ;jump if true
  37  000 106   007                  RLC      ;shift
  38  000 107   007                  RLC      ;  left
  39  000 110   007                  RLC      ;    three bits
  40  000 111   007      SECND:      RLC      ;shift
  41  000 112   007                  RLC      ;  left
  42  000 113   007                  RLC      ;    three bits
  43  000 114   266      ORMEM:      ORA  M   ;OR A-register
  44  000 115   167                  MOV  M,A ;  with memory
  45  000 116   005                  DCR  B   ;decrement digit countsr
  46  000 117   360                  RP       ;back to NXDIGT if ws haven't
                                              ;yet processed three digits.
  47  000 120   043                  INX  H   ;increment memory addrssa
  48  000 121   303 003 000          JMP  NXBYTE ;back to enter another
                                               ;byte.
  49  000 124   007 000      STKADD: DW   NXDIGT
```

T I N Y B A S I C 6 8 0 0

Tiny BASIC is a proper subset of Dartmouth BASIC, consisting of the following statement types only:

LET	IF	RETURN	LIST
PRINT	GOTO	END	RUN
INPUT	GOSUB	CLEAR	

Arithmetic is in 16-bit integers only with the operators + - * / and nested parentheses. There are only the 26 single letter variable names A,B,...Z, and no functions. There are no strings or arrays. This language has been defined and discussed extensively in recent issues of PCC and the offshoot newsletter.

For the 6800, this language has been augmented to include the functions, RND, USR, and PEEK and POKE, giving the user access to all his system components in the 6800 from the BASIC program. While Tiny BASIC specifies line numbers less than 256, this version allows numbers to 32767.

The interpreter fits in 2K of memory and uses another 200 bytes for temporaries (in page 0). This leaves all the rest of memory for user programs. It is available in two versions, one for RAM-based systems (0-08FF) and one for the AMI single board computer "PROTO" (program resides in pROM E000-E7FF).

For a copy of the object tape and user manual send $5.00 to:

Tom Pittman, P.O. Box 23189, San Jose, CA 95153

Please specify whether it is for PROTO or RAM-based system.

This is intended as a low-margin enterprise. If the response is good there will be more software available on the same basis. If there is little interest, or if there is heavy pirating, this will be considered an expensive experiment.

LO*OP CENTER REPORT

LO*OP Center is alive and well in Cotati! We have just finished giving a 40 hour course in Computer Literacy to 4th, 5th, and 6th graders from our local public school. Anyone with ideas to add to our course or interest in giving such a course please contact us. Our staff is now engaged in consolidating our material for publication. The book should be useful to teachers and self-directed students as well as hobbyists who would like to get involved with teaching. Yours from clickity-clickity land, Liza

LO*OP Center, Inc., 8099 La Plaza, Cotati, CA 94928
Telephone number (707) 795-0405

CLUB MEETING SCHEDULE

HOMEBREW COMPUTER CLUB meetings are held every two weeks; April 14th, April 28th, May 12th, etc. Location is Stanford Linear Accelerator Center, Menlo Park, California. Meetings begin at 7:00 P.M. Ask the guard at the gate for directions to the meeting room.

Status Report: **Dr. Dobb's Journal of Computer Calisthentics and Orthontia**

Dr. Dobb's Journal started out to be a three-issue quickie for distributing information about Tiny BASIC, an interpreted subset of BASIC that is simple to implement on micros with minimal memory. The first issue was 19 pages, xeroxed on letter paper, mailed around the end of February. The response to it made it evident that there are some significant information gaps left by the current major computer hobbyist publications. They obviously have their hands (and pages) full, just covering hardware and relatively small bits of software.

Therefore, Peoples' Computer Company decided to convert the *Journal* into a regular and ongoing publication to fill those gaps. They hired several new staff members, including a full-time Editor for the *Journal*. After a start-up pause, the system is up and running. The second issue is 36 pages, to be mailed April 12th. The third issue is scheduled to go out by April 26th, with two more issues being produced in May. Thereafter, they will settle into a regular monthly publication schedule, excluding July and December. Incidently, these are "all meat" pages; there are no display ads.

About those information gaps — The *Journal* will function primarily as a reference publication. Primary focus will be on:
— Comprehensive details for implementing specific systems software. Tiny BASIC is merely one example. They are already pursuing the development of a tiny APL, MAPLE, a CAI language, PILOT-73, a structured assembler, a floppy disc file system, and anything else they can find to place in the public domain. Their second issue carries complete implimentation documentations and source code for the Texas version of Tiny BASIC (TBX), Steve Dompier's music article, notes on a high level language being developed for the 8008/8080 by Scelbi, TBX mods for the TVT-2, and more. Issue 3 will include complete documentation and source code for a Denver version of Tiny BASIC, notes on a TV Dazzler software contest and a manufacturer-independent software repository, and much more.
— Reprinting articles and schematics from many of the club newsletters, out-of-print periodicals, and publications that are not generally available to the computer hobbyist.
— Detailed "blue skying", outlining projects they feel are realizable in the immediately foreseeable future. Tiny BASIC was just the first. As these projects are implemented, they will publish the details. For example, the second issue contains the first two of a forthcoming series of articles on home computer speech synthesis. They discuss Votrax, which has been manufacturing phoneme generators for some years. Until now, these have been peddled for $3500 and up. After two lengthy conversations with the *Journal* Editor, Votrax is proposing a phoneme generator kit for hobbyists, composed of established, debugged, in-production subsystems for $1K. ***This allows the home computer to perform unlimited English language speech synthesis!***
— Indices for ***all*** of the major computer hobbyist periodicals, and for selected articles from a number of other publications. This is sort of a "Reader's Guide to Periodical Home Computer Literature."
— Lists and directories of: computer stores and distributers, sources of used computer equipment, clubs and organizations, home computer users & their equipment, etc..
— They will also carry classified ads, Letters to the Editor that have technical or critical content, book reviews, news quickies, and articles best categorized as "consumer protection" notes, and "computers and society" articles.

They are totally subscription-supported, so if the above sounds interesting, you might consider a trial subscription: $1.50 for a single issue, $3 for the first three issues, or $10/year (10 issues). Address: PCC, Box 310, Menlo Park 94025.

BULLETIN BOARD

FOR SALE OR TRADE - Cartrivision CCTV-VTR. Front panel, knobs, no cabinet. Color record from TV, playback from tape cartridge. B-W camera, zoom lens, mike, with cables, RF modulator, many hours of blank tapes, one pre-recorded tape, and documentation. $500 or trade for IC's (8080), keyboard, monitor, PCB's, I/O (typewriter/printer/cassette), etc. Have Cybercom desk with CC and P.S. Pat Rankin, 1085 Tasman Dr. #29, Sunnyvale, CA 94086, telephone 734-5985

WANTED - Paper tape listing of 4K assembler or Tiny BASIC for 8080. Or can someone copy same on 1702's for me? I have 4K bytes of 1702's. Glenn Nelson, Box 1846, Brown University, Providence, RI 02912

USED KSR TELETYPES - Also, other terminals and acoustic couplers for sale. D. R. Reichel, Anderson Jacobson, Inc., 1065 Morse Avenue, Sunnyvale, CA 94086, telephone (408) 734-4030.

POWER SUPPLY - Computer grade. 20 units available, new, each supply has three outputs: 5VDC @ 12a., 15VDC @ 2.8a., 15VDC @ 2.8a, all outputs are filtered, regulated, and variable. Price $100 plus 10% for postage and handling. Ten day guarantee if returned in good condition, 25% off if ordered before May 1, 1976. M. D. Rivers, 28 Leyfred Terrace, Springfield, Massachusetts 01108, telephone 732-5891

SEMINAR - SCAMP technical description that defines SC/MP and its supporting compliment of software and hardware. April 21, 1976 from 8:30 - Noon, Palo Alto, CA, Rickey's Hyatt House 4219 El Camino Real. Presented by Elmar and National, Wade Miracle is speaker.

HOMEBREW COMPUTER CLUB

NEWSLETTER

Post Office Box 626
Mountain View, CA 94042

FIRST CLASS MAIL